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What is unit testing? 2 Numbers
Answer:- Repeated

Define Modularity? 3 Numbers
Answer:- Repeated

Define Textual Analysis? 3 Numbers
Answer:- (Page 90)
The oldest techniques to identify objects and their relationships. This technique is called Textual Analysis. It was initially developed by Abbot and then extended by Graham and others. In this technique different parts of speech are identified within the text of the specification and these parts are modeled using different components.

How one can avoid hazards caused by side effects? 3 Numbers
Answer:- Repeated

Describe Loop Errors and symptoms? 5 Numbers
Answer:- (Page 220)

Loop Errors

- Loop errors break down into several different subtypes.
- They occur around a loop construct in a program.
- Infinite loops, off-by-one loops, and improperly exited loops.

Symptoms

- If your program simply locks up, repeatedly displays the same data over and over, or infinitely displays the same message box, you should immediately suspect an infinite loop error.
- Off-by-one loop errors are quite often seen in processes that perform calculations.
- If a hand calculation shows that the total or final sum is incorrect by the last data point, you can quickly surmise that an off-by-one loop error is to blame.
- Likewise, if you were using graphics software and saw all of the points on the screen, but the last two were unconnected, you would suspect an off-by-one error.

Write Note on Partitioning? 5 Numbers
Answer:- (Page 135)
Partitioning of architecture is an important concept. What we basically want to do is distribute the responsibilities to different subsystems so that we get a software system which is easy to maintain. Partitioning results in a system that suffers from fewer side effects. This ultimately means that we get a system that is easier to test and extend and hence is easier to maintain.

Partitioning of architecture may be "horizontal" and/or "vertical".

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In the horizontal partitioning we define separate branches of the module hierarchy for each major function and control modules are used to coordinate communication between functions.

Vertical partitioning divides the application from a decision making perspective. The architecture is partitioned in horizontal layers so that decision making and work are stratified with the decision making modules residing at the top of the hierarchy and worker coming at the bottom. This partitioning is also known as factoring.

What is testing and also describe successful testing?
Answer:- Repeated

Mention two General naming conventions for Java? Same above
Answer:- Repeated

Memory and resource leak symptoms 3 marks
Answer:- (Page 216)

Symptoms

- System slowdowns
- Crashes that occur "randomly" over a long period of time

Tools and Methods used in software engineering 5
Answer:- (Page 6 & 11)

- Programming Language
- Programming Language Design
- Software Design Techniques
- Tools
- Testing
- Maintenance
- Development etc.

Methods: Methods provide the technical "how-to's" to carryout these tasks. There could be more than one technique to perform a task and different techniques could be used in different situations.
Tools: Tools provide automated or semi-automated support for software processes, methods, and quality control.

Five guidelines using for Code 5
Answer:- (Page 150)

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1. Names representing types must be nouns and written in mixed case starting with upper case.
Line, FilePrefix

2. Variable names must be in mixed case starting with lower case. line, filePrefix

3. Names representing constants must be all uppercase using underscore to separate words.
MAX_ITERATIONS, COLOR_RED

4. Names representing methods and functions should be verbs and written in mixed case starting with lower case.
getName(), computeTotalWidth()

5. Names representing template types in C++ should be a single uppercase letter.
template<class C, class D>

UNIT TESTING?
Answer:- Repeated

WHITE BOX TESTING?
Answer:- (Page 202)
In white box testing we test the structure of the program. In this technique the test cases are written in a manner to cover different possibilities in code.

OBJECTIVE OF TESTING AND SUCCESSFUL TEST?
Answer:- Repeated

LOOP ERROR BUG?
Answer:- Repeated

BALANCING ACT IN SOFTWARE ENGINEERING?
Answer:- (Page 7)
Software Engineering is actually the balancing act. You have to balance many things like cost, user friendliness, Efficiency, Reliability etc. You have to analyze which one is the more important feature for your software is it reliability, efficiency, user friendliness or something else.

HOW COMMENTS BE INDENTED?
Answer:- Repeated

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WHY SPECIAL CHARACTERS TAB AND BREAK PAGE BE AVOIDED?
Answer:- Repeated

THREE NON EXCEPTIONAL PATHS?
Answer:- (Page 185)

- if (e.Title() == "CEO" || e.Salary() > 10000)
  · if e.Title() == "CEO" is true then the second part is not evaluated and e.Salary() will not be called.
  · cout will be performed
- if e.Title() != "CEO" and e.Salary() > 10000
  · both parts of the condition will be evaluated
  · cout will be performed.
- if e.Title() != "CEO" and e.Salary() <= 10000
  · both parts of the condition will be evaluated
  · cout will not be performed.

INCLUDE FILES AND INCLUDE STATEMENT?
Answer:- (Page 157)
1. Header files must include a construction that prevents multiple inclusions. The convention is an all uppercase construction of the module name, the file name and the h
Suffix.

```
#ifndef MOD_FILENAME_H
#define MOD_FILENAME_H
:
#endif
```

The construction is to avoid compilation errors. The construction should appear in the top of the file (before the file header) so file parsing is aborted immediately and compilation time is reduced.

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How one can avoid hazards caused by side effects?
Answer:- Repeated

Define debugging?
Answer:- Repeated

Define testing?
Answer:- Repeated

Software development processes?
Answer:- (Page 8)
Software development is a process of balancing among different characteristics of software described in the previous section. And it is an art to come up with such a good balance and that art can be learned from experience.

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Inspection pre-conditions?
Answer:- (Page 210)
A precise specification must be available before inspections. Team members must be familiar with the organization standards. In addition to it, syntactically correct code must be available to the inspectors. Inspectors should prepare a checklist that can help them during the inspection process.

How software engineer can work on domains if he gets the technical work..?
Answer:- (Page 5)
"All aspects of software production' Software engineering is not just concerned with the technical processes of software development but also with activities such as software project management and with the development of tools, methods and theories to support software production".
These definitions make it clear that Software Engineering is not just about writing code.

i. describe two Unit Testing Tips
Answer:- Repeated

ii. Equivalence Classes
Answer:- (Page 199)
Equivalence Classes or Equivalence Partitioning
Two tests are considered to be equivalent if it is believed that:
if one discovers a defect, the other probably will too, and
If one does not discover a defect, the other probably won't either.
Equivalence classes help you in designing test cases to test the system effectively and efficiently. One should have reasons to believe that the test cases are equivalent.

iii. Where the term compute method use.
Answer:- Repeated

3 Question of 3 marks
i. Describe three coverage schemes related to white box testing
Answer:- Repeated

ii. Memory over-runs and their symptoms
Answer:- (Page 220)
A memory overrun occurs when you use memory that does not belong to you. (**Symptoms repeated**)

iii. The use of do.... while loops should be avoided, why is that?
Answer:- Repeated

3 Question of 5 marks
i. write a note on Usefulness of testing
Answer:- Repeated

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ii. Identifier names also play a significant role

Answer:- (Page 148)

Identifier names also play a significant role in enhancing the readability of a program. The names should be chosen in order to make them meaningful to the reader. In order to understand the concept, let us look at the following statement.

```
if (x==0) // this is the case when we are allocating a new number
```

In this particular case, the meanings of the condition in the if-statement are not clear and we had to write a comment to explain it. This can be improved if, instead of using x, we use a more meaningful name. Our new code becomes:

```
if (AllocFlag == 0)
```

The situation has improved a little bit but the semantics of the condition are still not very clear as the meaning of 0 is not very clear. Now consider the following statement:

```
If (AllocFlag == NEW_NUMBER)
```

We have improved the quality of the code by replacing the number 0 with a named constant NEW_NUMBER. Now, the semantics are clear and do not need any extra comments, hence this piece of code is self-documenting.

iii. Good clues, Easy Bugs explain this term.

Answer:- (Page 226)

Good clues, Easy Bugs

Get A Stack Trace

In the debugging process a stack trace is a very useful tool.
Following stack trace information may help in debugging process.

- Source line numbers in stack trace is the single, most useful piece of debugging information.
- After that, values of arguments are important
  - Are the values improbable (zero, very large, negative, character strings with non-alphabetic characters?
- Debuggers can be used to display values of local or global variables.
  - These give additional information about what went wrong.

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Q2 Define Unit testing
Answer:- Repeated

Q3 What is the syntax used for naming objects in a sequence diagrams?
Answer:- (Page 107)
The syntax used for naming objects in a sequence diagram is as follows:

- syntax: [instanceName][:className]
- Name classes consistently with your class diagram (same classes).
- Include instance names when objects are referred to in messages or when several objects of the same type exist in the diagram.

Q4 Define these terms: Branch Coverage, Statement Coverage.
Answer:- (Page 202)
Branch Coverage: In this scheme, all the possible branches of decision structures are tested. Therefore, sequences of statements following a decision are tested.

Statement Coverage: In this scheme, statements of the code are tested for a successful test that checks all the statements lying on the path of a successful scenario.

Q5 Bit fields do suffer from a lack of portability between platforms. Why?

Bit fields are a convenient way to express many difficult operations. However, bit fields
do suffer from a lack of portability between platforms:
Answer:- (Page 183)

- integers may be signed or unsigned
- Many compilers limit the maximum number of bits in the bit field to the size of an integer which may be either 16-bit or 32-bit varieties.
- Some bit field members are stored left to right others are stored right to left in memory.
- If bit fields too large, next bit field may be stored consecutively in memory (overlapping the boundary between memory locations) or in the next word of memory.

Q6 Consider the following Use Case diagram: Identify the system actors in given use case diagram.

Q7 Why Special characters like TAB and page break must be avoided? Explain
Answer:- Repeated

Q8 Write down at least two (3) guideline that can avoid hazards caused by side effects.
Answer:- Repeated

Q9 Discuss five points, how a "variable "is efficiently used in a program?
Answer:- Repeated

Q10 Differentiate between Black box testing and white box testing.
Answer:- (Page 198)

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